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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/518,937	03/06/2000	Ajay Divakaran		8894

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Patent Department
Mitsubishi Electric Information Technology Center
America Inc
201 Broadway
Cambridge, MA 02139

EXAMINER

NGUYEN, MAIKHANH

ART UNIT PAPER NUMBER

2176

DATE MAILED: 02/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/518,937

Applicant(s)

DIVAKARAN ET AL.

Examiner

Maikhanh Nguyen

Art Unit

2176

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is responsive to communications: Request for Reconsideration filed 10/18/2004 to the original application filed 03/06/2000.
2. Claims 1-13 are currently pending in this application. Claim 1 is independent claim.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Yeo et al.**

“Rapid Scene Analysis on Compressed Video”, 12/1995 in view of **Ganser et al.** (U.S. 4,953,106 – issued 08/1990).

As to independent claim 1:

- a. Yeo teaches:

- (i) segmenting the multimedia content to extract objects (*e.g., segment the videos into temporal 'shots'; page 533, left col., 2nd para.*);
 - (ii) extracting and associating features of the objects to produce content entities (*e.g., automatically extract key informations form images and videos; page 533, left col., 2nd para.*); and
 - (iii) measuring attributes of each content entity (*e.g., image attributes such as color histogram can be precomputed; page 543, sec. vii.*).
- b. Yeo does not specifically teach:
 - (i) coding the content entities to produce directed acyclic graphs of the content entities, each directed acyclic graph representing a particular interpretation of the multimedia content; and
 - (ii) assigning the measured attributes to each corresponding content entity in the directed acyclic graphs to rank order the multimedia content.
- c. Ganser teaches:
 - (i) coding the content entities to produce directed acyclic graphs of the content entities (*e.g., drawing directed graphs that provide appropriately interconnected labeled blocks or nodes with reduced edge crossings and improved picture clarity from a user-supplied block or node interconnection listing; col.1, lines 61-65*), each directed acyclic graph representing a particular interpretation of the multimedia content (*e.g., the graph description is used to construct an input graph of attributed nodes and edges. Such first step, hereinafter termed the 'parser', translates the*

edge list descriptions into appropriate internal presentations in memory of processor 11; col.4, lines 3-10); and

- (ii) assigning the measured attributes to each corresponding content entity in the directed acyclic graphs to rank order the multimedia content (*e.g., finds an optimal rank assignment for the nodes. An optimal rank assignment assigns integer ranks to nodes such that the sum of the "costs" of edges is minimized; col.4, lines 40-44).*

- d. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the feature from Ganser in the system of Yeo because Ganser's teaching would have provided the capability for allowing the best rankings of nodes, producing a satisfactory reduction in the edge crossings within a reasonable period of time, and improve the final placement of nodes in the drawing after edge crossings are minimized, other than straightening edges.

As to dependent claim 2:

Yeo teaches the measured attributes include intensity attributes (*page 543, section vii*).

As to dependent claim 3:

Yeo teaches the measure attributes include direction attributes (*page 543, section vii*).

As to dependent claim 4:

Yeo teaches the measured attributes include spatial attributes (*page 536, section A*).

As to dependent claim 5:

Yeo teaches the measured attributes include temporal attributes (*e.g., temporal segmentation; page 535, section iv*).

As to dependent claim 6:

- a. Ganser teaches the measured attributes are arranged in an increasing rank order *(the lowest rank to the highest rank; col.6, lines 59-61 & col.8, lines 3-31)*.
- b. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the feature from Ganser in the system of Yeo because Ganser's teaching would have provided the capability for ensuring the initial node ordering of a directed tree has no crossings.

As to dependent claim 7:

- a. Ganser teaches the measured attributes are arranged in an decreasing rank order *(the highest rank to the lowest rank; col.6, lines 59-61 & col.8, lines 3-31)*.
- b. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the feature from Ganser in the system of Yeo because Ganser's teaching would have provided the capability for ensuring the initial node ordering of a directed tree has no crossings.

As to dependent claim 8:

- a. Ganser teaches traversing the multimedia content according to the directed acyclic graph *(col. 6, line 59-col.7, line 1 & col. 8, lines 23-31)* and the measured attributes assigned to the content entities *(e.g., finds an optimal rank assignment for the nodes. An optimal rank assignment assigns integer ranks to nodes such that the sum of the "costs" of edges is minimized; col.4, lines 40-44)*.
- b. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the feature from Ganser in the system of Yeo

because Ganser's teaching would have provided the capability for allowing the best rankings of nodes, producing a satisfactory reduction in the edge crossings within a reasonable period of time, and improve the final placement of nodes in the drawing after edge crossings are minimized, other than straightening edges.

As to dependent claim 9:

- a. Ganser teaches summarizing the multimedia content according to the directed acyclic graph and the measured attributes assigned to the content entities (*e.g., finds an optimal rank assignment for the nodes. An optimal rank assignment assigns integer ranks to nodes such that the sum of the "costs" of edges is minimized; col.4, lines 40-44*).
- b. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the feature from Ganser in the system of Yeo because Ganser's teaching would have provided the capability for allowing the best rankings of nodes, producing a satisfactory reduction in the edge crossings within a reasonable period of time, and improve the final placement of nodes in the drawing after edge crossings are minimized, other than straightening edges.

As to dependent claim 10:

Yeo teaches the multimedia content is a three dimensional video sequence (*e.g., video; page 533; section Introduction*).

As to dependent claim 11:

- a. Ganser teaches nodes of the directed acyclic graphs represent the content entities and edges represent breaks in the segmentation, and the measured attributes are associated with the corresponding edges (*col.9, line 1-col.10, line 14*).
- b. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the feature from Ganser in the system of Yeo because Ganser's teaching would have provided the capability for allowing the best rankings of nodes, producing a satisfactory reduction in the edge crossings within a reasonable period of time, and improve the final placement of nodes in the drawing after edge crossings are minimized, other than straightening edges.

As to dependent claim 12:

- a. Ganser teaches at least one secondary content entity is associated with a particular content entity, and wherein the secondary content entity is selected during the traversing (*col.6, line 59-col.7, line 1 & col.8, lines 3-21*).
- b. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the feature from Ganser in the system of Yeo because Ganser's teaching would have provided the capability for allowing the best rankings of nodes, producing a satisfactory reduction in the edge crossings within a reasonable period of time, and improve the final placement of nodes in the drawing after edge crossings are minimized, other than straightening edges.

As to dependent claim 13:

- a. Ganser teaches a summary of the multimedia is a selected permutation of the content entities according to the associated ranks (*col.4, lines 1-51*).

- b. It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the feature from Ganser in the system of Yeo because Ganser's teaching would have provided the capability for allowing the best rankings of nodes, producing a satisfactory reduction in the edge crossings within a reasonable period of time, and improve the final placement of nodes in the drawing after edge crossings are minimized, other than straightening edges.

Response to Arguments

4. Applicant's arguments filed 08/28/2003 have been fully considered but are moot in view of the new ground(s) of rejection.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Clark U.S Patent No. 5,297,150 issued: Mar. 22, 1994

Divakaran et al. U.S Patent No. 6,618,507 issued: Sep. 09, 2003

Meier et al., "Video Segmentation for Content-Based Coding", IEEE Transaction On Circuits and System for Video Technology", Vol.9, No.8, pages 1190-1203, December 1999.

Yeo et al., "A Unified Approach to Temporal Segmentation of Motion JPEG and MPEG Compressed Video", IEEE, pages 81-88, May 1995.


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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Maikhanh Nguyen whose telephone number is (571) 272-4093. The examiner can normally be reached on Monday - Friday from 9:00am – 5:30 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph H Feild can be reached on (571) 272-4090.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Maikhanh Nguyen
February 7, 2005



SANJIV SHAH
PRIMARY EXAMINER